MOUNT PINOS BLUE GROUSE (*Dendragapus obscurus howardi*)

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Criteria Scores

Population Trend	Range Trend	Population Size	Range Size	Endemism	Population Concentration	Threats
15	10	7.5	10	10	0	5

Special Concern Priority

Currently considered a Bird Species of Special Concern (year-round), Priority 2. No subspecies were included in the original list (Remsen 1978), and this subspecies was not included on CDFG's (1992) list.

Breeding Bird Survey Statistics for California

Data inadequate for trend assessment (Sauer et al. 2000).

General Range and Abundance

Three subspecies of blue grouse are recognized in California, though their geographic and genetic delineations have not been subjected to modern analytical techniques. Mount Pinos blue grouse, the southernmost of the three subspecies, inhabits the southern Sierra Nevada south of Kings Canyon, the Tehachapi Mountains, and the Mount Pinos area (Grinnell and Miller 1944). It is most abundant and widespread at the northern limit of its range. Further south, appropriate habitat is limited to montane "islands" where blue grouse have historically been scarce.

Seasonal Status in California

Occurs year round; breeding season extends from late March to late August, likely varying with latitude and elevation.

Historical Range and Abundance in California

Grinnell and Miller (1944) considered the subspecies "locally common" in suitable parts of the main southern Sierra Nevada but "sparse" on the montane islands at the southwest limit of its range.

Specimens and eggs collected in the early 1900s confirmed blue grouse in the Piute Mountains, Tehachapi Mountains, the Mount Pinos/Mount Able (Cerro Noroestre) area, and Frazier Mountain (Willet 1933, Grinnell and Miller 1944). A single report originated from Big Pine Mountain, Santa Barbara County, in 1938 (Lentz 1993). Most southern records originated from Mount Pinos, where in 1928 the egg collector J. R. Pemberton estimated there to be no more than 50 pairs (WFVZ egg data slip). Grinnell and Miller (1944) indicated blue grouse had become "very scarce" on Mount Pinos by the early 1940s.

Recent Range and Abundance in California

Based on limited information, the Mount Pinos blue grouse appears to be extirpated or nearly extirpated from the habitat "islands" that comprise the southern portion of its range. It is locally abundant in the northern portion of its range, but becomes increasingly rare toward the southern terminus of the Sierra Nevada.

Densities at the northern limit of the subspecies' range are the highest blue grouse densities recorded anywhere in California. High densities were first noted in this area in the late 1970s (F. Zwickel pers. comm.). In 1992 densities of hooting males were estimated to be 3 males/km^2 at Big Baldy Ridge, Sequoia National Park, Tulare County (J. Bland unpubl. data). Although high by California standards, densities can exceed 130 males/km^2 in the Pacific Northwest (Bendell and Zwickel 1984). At the periphery of their range and in heterogeneous habitats, as blue grouse are in the Sierra Nevada, males tend to congregate in "hooting groups" in spring (Bendell and Elliott 1967, Bendell and Zwickel 1984). These groups appear to be small and widely dispersed throughout the Sierra Nevada (Bland 1997). Bland (1993) encountered only 14 hooting groups along 104 km of transects in presumed blue grouse habitat. The number of males in these groups was 5 or less. Densities of hooting male blue grouse are lower on harvested National Forest lands than on nearby un-harvested National Park lands at sites sampled throughout the Sierra Nevada (Bland 1993). In Sequoia National Park and Sequoia National Forest, abundances of Mount Pinos blue grouse were

1.5 and 0.5 hooting males/km, respectively (J. Bland unpubl. data).

The subspecies is common on the eastern slopes of the southern Sierra, as far south as the southwest corner of Inyo County (T. Heindel pers. comm.). To the west, in Tulare County, it appears to be scarce south of about 36 degrees latitude (B. Barnes pers. comm.), in the southern Greenhorn Mountains and Domeland Wilderness Area. Whether this was true historically, or has resulted from extensive clearcutting and wildfire in recent decades, remains uncertain due the paucity of observational records from this region.

In recent decades blue grouse have rarely been reported south of the Tulare-Kern county line. The only recent report of blue grouse in the Piute Mountains is of a single bird on the east slope of Piute Peak in the spring of 1985 (K. Axelson pers. comm.). There are no recent reports of blue grouse from the Tehachapi Mountains (Garrett and Dunn 1981, C. Moore pers. comm.), where public access to potential grouse habitats is limited. The montane forests of the Piute and Tehachapi Mountains have been subjected to timber harvest in recent decades, but it is unknown whether significant numbers of blue grouse ever occupied these areas or if sufficient habitat ever existed to support resident populations.

There have been few recent confirmed records of blue grouse in the vicinity of Mount Pinos. Most are from the northern slopes of Mount Pinos and adjoining Sawmill Mountain, Grouse Mountain, and Mount Able, which all support isolated stands of fir. Fewer have come from Frazier Mountain and Tecuya Ridge, which support very limited fir forest. The last certain records were in the late 1970s (Lentz 1993). Bendell and Zwickel (1984) found no evidence of blue grouse in the Pinos/Sawmill/Abel area in 1978, and a 1979 US Forest Service survey found no grouse in the broader Mount Pinos or Mount Frazier areas (Weiss 1979). Both of the later surveys employed recorded female calls in spring. General avifaunal surveys conducted throughout the area from 1981 to1993 did not detect blue grouse (Lentz 1993). Lentz (1993) reviewed the most recent reports, including a July 1991 report that “lacked adequate documentation,” an “unconfirmed sighting” from

August 1992, and two "alleged" blue grouse on Sawmill Mountain in May 1993. Brief spring surveys (≤2 days) using recorded female calls failed to detect grouse on Big Pine Mountain in 1995 or on the north slope of Mount Pinos in 1999 (J. Bland unpubl. data).

It is uncertain why so few blue grouse have been detected around Mount Pinos in recent decades or whether a viable breeding population still exists there. Recent fire patterns may have altered vegetation features favored by blue grouse. Compared to hooting habitats of the southern Sierra, the upper slopes of Mount Pinos have fewer patches of shrubs (*Arctostapylos* spp., *Ceanothus* spp., *Ribes* spp.), and denser, more even-aged stands of fir (J. Bland pers. obs.). The pre-snowmelt timing and rugged location of hooting activity around Mount Pinos make encounters by causal visitors unlikely. Brood-rearing habitats may also have been degraded. Iris Meadow, the most likely brood-rearing meadow on Mount Pinos, is now flanked by a ski facility and busy campground. A U.S. Forest Service report suggested "the lack of recent spring sightings on Mount Pinos roughly coincides with the increase in human use of the area" (Weiss 1979). In a broader context, as local coniferous forests receded to higher elevations over the past 10,000 years, they may have became too small to support local populations of blue grouse without regular emigration from Sierra Nevada populations. Westward dispersal would have followed "stepping stones" of coniferous forest in the Piute and Tehachapi Mountains. The presumed degradation of these island habitats may now limit or prohibit this westward dispersal.

Ecological Requirements

In the Sierra Nevada portion of its range, the Mount Pinos blue grouse occupies different habitats according to season (Bland 1996). In spring, blue grouse congregate near traditional hooting sites in true fir (*Abies*) forest. Hooting habitat usually consists of open, mature *Abies/Pinus* forest on or near a ridge between 5500 and 9000 ft (1676 - 2743 m) elevation, in an area where snowpack melts early. At least a few fir or pine trees with diameters >100 cm are normally present, often in tight clusters of three to six trees. Understory vegetation typically consists of scattered clumps of woody

shrubs, herbs, and grasses (Bland 1993). Rarely, male blue grouse establish hooting sites in shrub/steppe vegetation within 2 km of a forest edge (Zwickel 1992). The sierra subspecies (*D. o. sierrae*), for example, has been observed hooting in Pinion-Juniper vegetation in Inyo County (T. Heindel pers. comm.). Mount Pinos blue grouse occupying the southern island habitats make at least some use surrounding shrublands, but all records of hooting Mount Pinos blue grouse appear to be from *Abies/Pinus* forest. The spring and summer diet of blue grouse consists of leaves and flowers of herbs; leaves, flowers and berries of shrubs; conifer needles; and invertebrates, including ants, beetles, and grasshoppers (Zwickel 1992).

Females select nest sites near male hooting territories. Eggs are normally laid in a shallow scrape, usually with overhead cover from a log, shrub, or rock overhang, but frequently at the base of a large tree with no immediate cover (Zwickel 1992). Soon after hatching the hen and brood usually move to a nearby meadow, where they have access to water, dense herbaceous cover, and insect foods. The typical or optimal distance between brood-rearing meadows and hooting sites has not been ascertained for Sierra Nevada conditions. Brood-rearing meadows are usually located at lower elevations, often in the Sierran mixed-conifer zone. The extent to which southern populations use shrub/steppe habitats for brood-rearing is unknown.

Winter activities of blue grouse have not been studied in California. Populations along the main axis of the Sierra Nevada probably undertake an upslope migration to dense, high-elevation conifer stands, as is characteristic of the species. Males depart breeding areas in mid- to late summer, females and young follow several weeks later (Zwickel 1992). Wintering blue grouse are mostly inactive, often remaining in the canopy of a single conifer tree. The foliage of the tree provides thermal cover and an ample supply of conifer needles and buds, the staple winter diet of blue grouse (Zwickel 1992).

The seasonal habitat associations of blue grouse may be quite different in the Mount Pinos area. Most observers consider the fir stands on north-facing slopes of major peaks to be the area's

core grouse courtship and nesting habitat. However, potential brood-rearing meadows are quite limited on these slopes (Lentz 1993). For this reason, grouse may make use of atypical brood-rearing habitats in the surrounding shrublands. Winter habitat associations also differ in the Mount Pinos area. There are no higher-elevation areas to move to, so grouse likely overwinter in the same forest patches where they breed. Such non-migratory behavior is not uncommon among other subspecies of blue grouse (Zwickel 1992).

Threats

The principle threat to Mount Pinos blue grouse is habitat degradation caused by incompatible timber harvest, fire suppression, and livestock grazing practices. Timber harvest that results in even-aged stands or evenly-distributed trees is detrimental to blue grouse, as is selective harvest of large, clumped, firs or pines at the perimeter of forest openings. Where fires are infrequent, fir stands can become too dense to serve as breeding habitat. Overly frequent fires may remove too much of the shrub canopy. Heavy livestock grazing in spring probably degrades the food and cover of brood-rearing meadows (Mussehl 1963, Zwickel 1972). Soon, the potential impact of resort and recreation development may also become apparent in the range of Mount Pinos blue grouse. In the Pacific Northwest, local blue grouse populations have been extirpated by recent urban and agricultural development (Zwickel 1992). Housing and resort developments now planned or underway on private lands throughout the Piute, Tehachapi, and Mount Pinos area could add significantly to fragmentation and degradation of grouse habitats. While territorial males are known to become habituated to humans, human activity may be unacceptable in the vicinity of brood-rearing meadows or winter roosting sites.

Legal hunting of blue grouse has not been permitted south of the Tulare-Kern county line since the 1950s. Where hunting is permitted, as in the Sierra Nevada portion of the Mount Pinos blue grouse's range, the numbers taken are estimated to be small (Zwickel 1992, CDFG 1991).

Management and Research Recommendations

! Confirm the subspecific status of Mount Pinos blue grouse with modern genetic techniques.

! Map all potential habitat patches, focusing on the distribution of fir stands and montane meadows and seeps (see Weiss 1979 and Lentz 1993).

! Conduct surveys of all potential breeding sites. Participants must have prior blue grouse experience and follow a recommended protocol (e.g., Bland 1992).

! Characterize the topography, vegetation, and juxtaposition of occupied seasonal habitats across the subspecies' range. Characterize site conditions where reproduction is relatively high, in view of improving habitat conditions at less productive sites.

! Conduct studies to assess the status of potential grouse habitats in the Piute and Tehachapi mountains and their importance as dispersal "stepping stones," the use of harvested and burned forests in the southern Sierra Nevada, the impact of livestock and recreational activity on nesting and brood-rearing, and the desirability and genetic/behavioral consequences of translocating grouse to formerly-occupied habitats.

! Improve inter-agency coordination regarding blue grouse, possibly through an inter-agency working group. Ensure consideration of blue grouse in timber harvest plans, grazing allotments, urban development, and recreation development.

Monitoring Needs

! Conduct surveys of hooting and brood-rearing areas throughout the subspecies' range on a 3- to 5-year basis, following a protocol such as recommended by Bland (1992). Check as many hooting groups as possible for persistence over time, and census some in detail to monitor the actual number of males. Conduct brood counts at known brood-rearing sites.

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